RECIPROCITY

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MOTION APPLICABLE TO SPACE?

The earth moves in relation to the sun at an average rate of 18.5 miles/second or 66,600 miles/hour or 30 kilometers/second.

The earth does not move in relation to space at the same rate as it does in relation to the sun.

Assuming that space is at rest, Michelson in 1881 proposed to measure the earth's rate of motion through space. For this purpose he invented the instrument known as the Michelson interferometer.

Michelson with his interferometer found that the earth seems not to move through space. He learned to his surprise that the earth seems not to move through space at any rate at all like that of its motion with reference to the sun. His experiment disclosed further that the earth's rate of motion through space may be negligible, as though its cyclical motion around the sun could be motionless with respect to space. He thereby reached the conclusion that the hypothesis of space at rest must be erroneous.

The hypothesis of a stationary ether (ether = a synonym for space) originated with Newton, who assumed that absolute space is immovable. Newton, however, did not create the hypothesis out of whole cloth. The idea of motionless space, whether space was conceived as a void (vacuum, empty) or as a plenum (ether, full), is as old as Lucretius, Epicurus, Aristotle, Zeno, Parmenides, Leucippus and Democritus. The hypothesis that space is stationary has been continued into present times by the authority of Einstein, who explicitly supposed that the idea of motion is inapplicable to space. Einstein modified Newton's concept of space to the extent that the latter believed time and space to be absolute, while the former was of the opinion that space and time appear essentially relative to the motion of entities exhibiting mass (material entities, substances, things, etc.).

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At issue is whether in fact physical space is at rest, stationary, immovable or is, like time a progression, as Dewey Larson's theory that space is reciprocally related with time implies. Larson is committed to the proposition that the idea of motion is applicable to space. Newton and Einstein were committed to the proposition that the idea of motion is NOT applicable to space.

It is improbable that all sides of this controversy can be equally correct. Which side do you favor and can you support? Your view, comment and evidence are invited and will be printed in future issues of Reciprocity, as space, time and the editor can allow.

TIME INCREASE WITH SPACE INCREASE?

Time increases with each passing moment. The moments may be conventional units, such as centuries or seconds, etc.

Time, however, never increases alone, does not increase by itself.

The cause of increasing time is highly controversial, since people don't agree about the nature of time.

One old disagreement has been resolved. The question whether time increases in and of itself and without regard to any other aspect of the world was answered affirmatively by Newton. Dewey Larson answers it negatively and in this the consensus of contemporary scientific opinion is with him.

However, while this old disagreement has been resolved, new disagreements have appeared and remain. For instance, if time does not increase by itself, with what is its increase associated?

Larson answers that time increase is related to temporal-spatial motion and space increase.

Einstein and most adherents of relativity theory answer that time and space increase are only virtual, not actual, that only material entities move, that the idea of motion is inapplicable to time and space and hence that the passage both of time and space is mythical.

Newton assumed that space always remains the same and immovable. Thus, he did not assume the passage of space, although he did assume the passage of time.

Einstein has gone further than Newton in denying the relevance of motion to space and time. His assumption of space-time continuum implies that both space and time always remain the same and immovable and that both temporal and spatial increase and decrease occur only relatively to the motion of material objects. Thus, the relativity theory implicitly denies not only the passage of space but also the passage of time as two essential aspects of physical motion.

While Einstein separated motion from any direct relation with time and space, Larson has separated motion from its widely presumed exclusive relation with matter. Larson agrees that matter is inseparable from motion but disagrees that motion is inseparable from matter. Motion and space-time are inseparable means that there is no space and/or time without motion and there is no motion without space and time. The Larson conception implies that motion is absolute, while rest is always relative. Perhaps this is why Piaget has found that ideas of space and time arise out of the child's perception of motion instead of the idea of motion being synthesized from prior perceptions of space and time.

It is improbable that all sides of this controversy can be equally correct. Which side do you favor and can you support? Your view, comment, and evidence are invited and will be printed in future issues as far as possible.

TIME THOUGHT-DEPENDENT?

Time and time knowledge are not necessarily identical. If they are, then, of course, time would be thought-dependent.

Conjecture about time is a last refuge of humankind's dream of escaping change. In this process the claim is made that time and the control of it may be put into the human mind. Elizabeth I of Great Britain is alleged to have proposed on her death bed: "All my possessions for another moment of time."

An objection to assuming the dependence of time on human thinking is that the assumption prevents inquiry about estimating rate of time increase and about causes of time rate.

It seems in order to draw a distinction between time, which is one of the two essential conditions of all physical motion, and specious time, denoting time knowledge.

Time is not the same as and does not depend on human knowledge of it. Time, considered from the physical aspect, exists independently

from human consciousness. It is not simply a psychological condition of the human mind, as Kant and others supposed. Time rather is a cause of the physical existence of all human beings and of their death. The oldest man who ever lived died at last. Time is a stuff of which both life and things are made and unmade. Human beings no more cause time than we cause galaxies, stars, planets and trees to be. Mother and father are a cause of their son's existence; the son is not a cause of his parents' existence. In the same way time is not prevented by the non-existence of human beings nor caused by our existence. Human beings presently are unable to stop time or even to accelerate or slow it down. Thus, we human knowers of time are not by this knowledge thereby also producers of time. Increasing time instead is a cause of the production and destruction of all knowing persons.

Time increase is only partly measured with a clock; the clock does not disclose any rate of time increase. To appreciate the uniform motion rate which clock time measures Larson thinks that space must be taken into account. The measure of one second is 186,000 miles or 3×10^5 kilometers.

Although Newton assumed that absolute space is immovable, Minkowski in 1908 showed that space in a state of uniform translation is just as compatible with Newtonian mechanics as space presumed in a stationary state. Larson thinks that time progresses with space at a rate of one second every 3×10^5 kilometers in all directions.

What do you think? Do space and time translate together at a uniform rate? Or does time progress while space does not, space remaining always the same and stationary? Or are both time and space always the same, changeless and stationary, only matter being movable? Your view, comment and evidence is invited about whether time is not or is thought-dependent and about the related issue whether time increases uniformly or not with space.

LARSON'S LATEST EASTERN TRIP

As forecast in the December issue of this newsletter, Mr. Larson made a trip east at the end of March to take care of several speaking commitments. Three formal lectures and one series of informal conferences were included in the following schedule:

March 30 - University of Michigan, Dearborn, Michigan.
In charge: Professor William J. Mitchell, School of Engineering.

March 31 - Adrian College, Adrian, Michigan.
In charge: Dr. Paul F. deLespinasse, Executive Committee, New Science Advocates.

April 4 - Wofford College, Spartanburg, S.C.
In charge: Dr. Dan W. Olds, Chairman, Dept. of Physics.

April 6 - University of North Carolina, Greensboro, N.C.
In charge: Dr. Walter H. Puterbaugh, Chairman, Dept. of Chemistry.

In view of the many inquiries that we have received, we are making the following statement as to the policies with respect to scheduling lectures: Neither Mr. Larson nor any of our other speakers makes a charge for lecturing. It is necessary, however, to meet the expenses that are involved, as our organization has no funds for this purpose. This means that we cannot bring Mr. Larson to the Midwest or East until some institution or group is prepared to underwrite at least a substantial portion of the cost of transportation from his home in Oregon. After a trip has been scheduled on this basis, it is possible to make some additional stops merely by covering the added costs. Those who wish to take advantage of an opportunity of this kind should let us know so that we can plan accordingly.

SUPPORT RECIPROCITY

This newsletter RECIPROCITY is published to produce an adequate evaluation of the integral reciprocal conception of motion in terms of space and time, proposed by Mr. Dewey Larson, author, of Portland, Oregon. A further aim of the newsletter is to advocate an inquiring, questioning and critically constructive investigation of all allegedly scientific speculation about the structure of the physical universe.

NEW SCIENCE ADVOCATES, publisher of RECIPROCITY, is a non-profit organization, formed for the above purposes. If you are willing to support the newsletter, please send a voluntary annual donation in an amount of your choice or, if you prefer an amount to be specified, say, two dollars. Please send it to Mr. Ronald Satz, NEW SCIENCE ADVOCATES, P.O. Box 223, Watervliet, N.Y. 12189 and mark that it is for the newsletter RECIPROCITY. As many issues of the newsletter on an annual basis will be published as desired and supported.

Please address all communications concerning RECIPROCITY to the editor, Professor Frank H. Meyer, University of Wisconsin - Superior, Physics Department, Superior, Wisconsin 54880. Please keep comment for printing in RECIPROCITY brief, at least until the newsletter can be expanded beyond its present length.

Your edited copy will not be published until it has been returned to you for your consent to and approval of publication and will be published under your name.

Volunteers to aid the editor with the tasks of editorship, transcribing and proofreading copy, in general producing and reproducing the forthcoming issues of RECIPROCITY, are WELCOME. If interested, please write to the editor.

ACTS TO COME

In subsequent issues of RECIPROCITY priority will be given to the supporters of the newsletter to use some of the space and time of each issue to discuss freely any topic or question pertinent to the evaluation of Mr. Dewey Larson's Reciprocal System of Physical Theory.

This priority will not be contingent upon agreement with the Larson theory. It will be independent of whether or not a newsletter supporter agrees with,subscribes to or supports the Reciprocal Theory of Larson.

The editor of RECIPROCITY wishes to encourage discussion and criticism of Mr. Larson's proposed explanations of the relations of time and space to temporal-spatial progression and other motions: radiation, energy, the gravitational motion of matter; the atomic structure of matter, condensed and fluid; electricity, magnetism; the expanding universe of galaxies; quasars, pulsars, etc.

For the above purpose a regular feature will be conducted in each coming issue of RECIPROCITY, contributed by the reader-investigator, reporting his or/and her and your own words and comment.

FUTURE FEATURES

There is no lack of questions and issues pertinent to Larson's Reciprocal Theory, that require further inquiry. Future issues of RECIPROCITY will be addressed to them, such as the following feature:

Is space-time an unbecoming continuum that merely contracts and dilates?

While Einstein adopted the unbecoming space-time continuum axiom, he pointed out that a continuum theory is not in accord with quantum mechanics:

In The Meaning of Relativity (Princeton: Princeton University Press; 1955), pp. 165-66) A. Einstein wrote:

> From the quantum phenomena it appears to follow with certainty that a finite system of finite energy can be completely described by a finite set of numbers (quantum numbers). This does not seem to be in accordance with a continuum theory, and must lead to an attempt

> to find a purely algebraic theory for the description of reality. But nobody knows how to obtain the basis of such a theory.

With the passage and increase of time, Dewey Larson, unknown to Einstein, proposed the basis of a purely algebraic theory for the description of reality, assuming a discrete theory of space-time. This appeared in 1959 in his book, The Structure of the Physical Universe,(Portland, Oregon; North Pacific Publishers).

The American materialist philosopher, George Santayana, showed in 1938 in his book, The Realm of Truth (Charles Scribner's Sons,p.4-5) that the essential implication of continuum theories, i.e. the infinite divisibility of space and time, is not a necessary truth.

The German mathematician, David Hilbert, was skeptical of the assumption that space-time is a continuum, since this assumption goes far beyond what observation has been able to confirm.

The American physicist, Richard Feynman in his book, The Character of Physical Law, conjectures that a discrete physical space is more compatible with the situation of quantum electrodynamics than is a space-time continuum.

Another feature to be expressed in a future issue of RECIPROCITY is a materialistic discussion of duration, such as is presented in Edmund Parson's Time Devoured (George Allen and Unwin Ltd., London, 1961).

Materialistic philosophy of time and space has not been as thoroughly investigated in the Western world as have positivistic and idealistic theories.

The question at issue is whether matter is or is not the most fundamental of all conceptions, in terms of which the rest of the physical universe, including space, time and motion, is comprehensible.

The philosophy of Marxism, which is called dialectical materialism, asserts that "the real unity of the world consists in its materiality." Engels asserted that "this is proved not by a few juggling phrases, but by a long and tedious development of philosophy and natural science."

Marxism asserts that motion and matter are inseparable and that time and space are forms of the existence of matter.

The postulates of Larson's reciprocal theory of motion imply that matter is only one of the basic forms of motion and that the unity of the world consists in the space-time opposites, which create a universe of motion rather than a universe of matter.

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